APPLICATION REPORT Food & Beverage

Level measurement of raw milk

- Improved stock management at the raw milk reception
- Minimised maintenance and product loss
- Hygienic level measurement using non-contact radar with PEEK antenna

1. Background

Latteria Soresina is one of Italy's largest and oldest manufacturers of dairy goods. The long-established company produces and distributes milk, butter, cream, whey and typical Italian cheeses including Latteria Soresina's renowned Grana Padano. The dairy operates four production sites in the Lombardy region that only process high quality milk produced by a selected group of farmers close to the production facilities.

2. Measurement requirements

The dairy was looking for improved stock inventory at one of their plants. This involved continuous level measurement of raw milk stored in outdoor tanks before processing. In the past, Latteria Soresina used hydrostatic pressure transmitters to measure the raw milk level. However, this contact technology often required expensive and time-consuming maintenance. In addition, the customer experienced accuracy drift and reliability issues. The customer therefore desired an alternative level solution on their milk tanks.

The vertical stainless steel tanks are 10 m / 32.8 ft height with a capacity of 100,000 litres / 26471.2 US gallons They have lateral agitators to stir the milk which is kept at +4 °C / +39.2 °F by tank insulation. The tanks are filled and emptied from the bottom as well as CIP cleaned and sterilised from time to time using caustic soda and nitric acid at +70 °C / +158 °F.

Medium:	Raw milk
Measuring range:	0...10 m / 32.8 ft
Dielectric constant:	ε_r = ca. 80
Viscosity:	ca. 1 cP
Density:	1.03 kg /l / 64.3 lb/ft³
Pressure:	Atm
Temperature:	4 °C / 39.2 °F

The new level transmitter must comply with the stringent hygienic and quality requirements of the food and beverage industry regarding material and process connections too. Given the environment of the outdoor installation, a high degree of ingress protection (IP67) was also compulsory.

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3. KROHNE solution

Latteria Soresina decided in favour of KROHNE's 2-wire radar level transmitter OPTIWAVE 7300 C. The dairy preferred the non-contact FMCW radar technology to pulse radar technology from competitors as it provides a more stable measurement in agitated environments. The OPTIWAVE reliably measures the level of the raw milk in spite of the moving surface of the medium, and the presence of foam and tank inserts.

The OPTIWAVE 7300 C was supplied with hygienic, FDA compliant PEEK antenna. It has been mounted on a nozzle on top of the tank using a hygienic Tri-Clamp 2" process connection. The quick setup function enabled the dairy to easily configure and start-up the device.

For inventory purposes, all measurements are continuously transmitted to the control room as a current output signal (4…20 mA).

OPTIWAVE 7300 C with hygienic Tri-Clamp connection

4. Customer benefits

The OPTIWAVE 7300 C helps Latteria Soresina improve stock management at raw milk reception. This hygienic, non-contact solution has increased the reliability, accuracy and long-term stability of their level measurements. The OPTIWAVE 7300 C is a top mounted device that minimises the frequency of maintenance activities and associated product losses.

5. Product used

OPTIWAVE 7300 C

- 2-wire non-contact radar (FMCW) level transmitter perfectly suited to the requirements of the dairy industry
- Increased accuracy and reliability for the measurement of dairy liquids, pastes and slurries
- Hygienic design: FDA and EC 1935/2004 compliant and suitable for SIP/CIP
- Reduced maintenance costs
- Long service life and stable operation for optimal productivity
- Measuring distance up to 80 m / 260 ft at max +150 °C / +300 °F
- PACTware and DTMs included as standard
- Current (mA), optional 2nd current output, HART®

Contact
Would you like further information about these or other applications?
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